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REMARKS

The undersigned thanks the Examiner for the telephone call held on July 28, 2009. During the telephone call, it was indicated that while a blank declaration was submitted with the application as filed, a fully-executed, German-language declaration was also submitted at the time of filing. Enclosed, for the Examiner's convenience, is a copy of the fully-executed, German-language declaration as filed with the application. As the fully-executed declaration submitted at the time of filing is in accordance with 37 C.F.R. §1.69 and §1.497, it is respectfully requested that the declaration be acknowledged by the Office as compliant (see MPEP §602.06 and §1893.01(e)). If, upon reconsideration, the Examiner maintains that the declaration is defective, then clarification as to what is necessary to satisfy the requirements is respectfully requested with the next Office communication.

It has been noted by the Examiner that the references cited in the Search Report have not necessarily been considered. Applicant has reviewed the Search Report and has determined that all of the references were previously included in the Information Disclosure Statement filed August 25, 2006, with the exception of Japanese Publication 11-254359 to Sei et al. As such, a further Information Disclosure is being filed concurrently herewith that includes Japanese Publication 11-254359, along with a computer-generated English translation, for the Examiner's consideration.

The specification has been amended in several locations per the Examiner's request. Particularly, section headers have been entered where appropriate, and the abstract has been amended to omit the legal phraseology and no longer exceeds 150 words. The specification has further been amended to delete reference numeral 2, and to correct the language inconsistences for reference numeral 12. No new matter has been introduced.

Claims 1-6 are currently pending in the application. Claim 4 has been amended to include the symbol α in parenthesis. Claim 1 has been amended to delete

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reference numerals and to emphasize the novel features of the present invention. In particular, that moving the tool to the desired tool center point occurs *without* searching the crossing point (R); and that the tip of the tool interrupts the light barriers successively, and deviation of the tool center point are determined from the temporally offset interruption of the individual light barriers. Support for these amendments can be found throughout the specification, particularly at page 5, lines 23-25 and 27-31, and page 10, second paragraph, in the application as filed.

Claims 1-6 have been rejected under 35 USC 102(b) as being anticipated by WIPO Publication 03/059580 A2 to Kemp et al. This sole ground of rejection is respectfully traversed in view of the amendments above and remarks below.

The present invention is directed towards a method for calibrating a tool center point (TCP) with high precision for tools used for industrial robots. One of the problems with the prior art is that, during an industrial robot's operation, the TCP can change thus leading to defective positioning of the center point and damage to the tool itself. There have been several methods introduced to calibrate a tool center point; however, the known methods have several disadvantages, including complications with coordinate transformation and wearisome efforts in searching for the light barriers' crossing point.

It is noted that the cited Kemp reference includes the same inventors as the present application. The primary difference between Kemp and the claimed invention is that there is no searching of the crossing point (R) of the two light barriers in the present invention. As discussed at pages 4, lines 21-26, searching for the crossing point of two light barriers is wearisome. Instead of searching for the crossing point of the light barriers, the claimed invention teaches determining deviations of the tool center point from the temporally offset interruptions. These features are recited in claim 1, as amended:

...b) moving the tool (13) directly to the DESIRED tool center point with reference to the TCP coordinate system through the light barriers without searching the crossing point (R) such that the tip of the tool (13) corresponding to the tool center point (TCP) interrupts the light

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barriers <u>successively</u>, and <u>deviation</u> of the tool center point are <u>determined</u> from the temporally offset interruption of the individual <u>light barriers</u>...

Conversely, Kemp teaches that the tool has to be moved within the calibration apparatus until the crossing point is reached and both light barriers are interrupted (see page 5, line 25 - page 6, line 1 in Kemp). Further, as discussed at page 9, second paragraph of Kemp, the tool has to move into the crossing point R. As such, the Kemp disclosure specifically requires searching for the crossing point (i.e., the tool has to be moved in different directions during the search). Thus, it is respectfully submitted that Kemp does not teach the claimed invention, as amended, but actually teaches away from the teachings since Kemp requires searching for the crossing point.

For the foregoing reasons, it is respectfully requested that the application be reconsidered, that claims 1 - 6 be allowed, and that the application be passed to issue.

Since all rejections, objections and requirements contained in the outstanding official action have been fully answered and shown to be in error and/or inapplicable to the present claims, it is respectfully submitted that reconsideration is now in order under the provisions of 37 C.F.R. §1.111(b) and such reconsideration is respectfully requested. Upon reconsideration, it is also respectfully submitted that this application is in condition for allowance and such action is therefore respectfully requested.

A provisional petition is hereby made for any extension of time necessary for the continued pendency during the life of this application. Please charge any fees for such provisional petition and any deficiencies in fees and credit any overpayment of fees to Attorney's Deposit Account No. 50-2041.

Respectfully submitted,

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